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An Introduction to Practical Astronomy, with a Collection of Astronomical Tables. By Elias Loomis, LL.D., Professor of Mathematics and Natural Philosophy in the University of the City of New York. New York, 1855.

The object of this work is to provide amateurs of astronomy, individuals engaged in astronomical expeditions and Government surveys, &c. &c., with a manual containing an explanation of the methods generally employed in the ordinary class of astronomical computations. The various processes are illustrated by a copious collection of examples, and a series of tables is given to facilitate the labours of the computer. It may be remarked that the work is very lucidly drawn up and that a due regard to practical utility is visible in every page.

Results of Astronomical Observations made at the Observatory of Harvard College, under the Direction of William Crouch Bond, A.M. (*Zone Catalogue of* 5500 *Stars, situated between the Equator and* 0° 20′ *North Declination, observed during the Years* 1852–3), *Cambridge, U.S.*, 1855.

In an Introduction extending to ninety-seven pages the author gives a complete description of the instrumental means, and of the methods of observation and reduction, employed in these observations. The plan of observation adopted for the zones contained in this volume includes the determination of the right ascension and declination of all stars from the equator to 0° 20′ of north declination to the eleventh magnitude, and as many of the twelfth as could be conveniently observed in their passage without interfering with the observation of brighter stars; the position of each has been twice determined, as a rule, both in right ascension and declination, by observations on different nights.

The present volume contains sixty-two zones, comprising between five and six thousand stars, for all of which the reductions have been applied to refer them to the mean equinox for the beginning of the year 1852 or 1853. In the recording of the right ascensions the electro-magnetic method was employed. The following description is given of this process:—

"All the observations of right ascensions have been recorded by the electro-magnetic method, which is perfectly adapted to the wants of the astronomer in a work of this nature. In three most important requisites it has unquestionably the advantage over any of the plans hitherto used,—it is more accurate in its results; it is superior in point of convenience, and in this respect recommends itself to the observer, relieving him from much labour, and contributing to the ease and comparative comfort with which the work can be prosecuted; lastly, the time necessary for completing an observation is greatly shortened, and thus an opportunity is afforded for repetition, or for determining the position of more new objects than could otherwise be included.

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"The first step preparatory to the observation of a zone is to place the record-paper on the cylinder of the spring-governor,* and to adjust the galvanic connexions, recording-pen, &c. The equatoreal is then set upon a star, previously selected for the starting point of the zone, of which the right ascension and declination are known; for convenience some bright star is usually chosen. The focal adjustment is now examined, and made to satisfy the condition that the parallax of the image of the star, with reference to the divisions of the scale, should be as nearly as possible eliminated.

"The zero of position of the right-ascension lines is next determined by several passages of a suitable star, and the position circle of the micrometer firmly clamped at the required reading. In this situation the eye-piece has a sliding motion across the scale in the direction of right ascension,—a very useful contrivance, which enables the observer to command the field preceding that which is the immediate scene of observation, and gives time for estimating magnitudes, &c., before the star enters the scale.

"The connexion of the battery with the clock and recording apparatus having been made, and the indications of the barometer and external thermometer read off, the telescope is clamped in right ascension and in declination, so that the zero star shall cross the scale at the reading corresponding to the minutes and seconds of its mean declination for the beginning of the year. As each star approaches the scale, its magnitude is noted, and any peculiarity of appearance, colour, &c., if such are presented. When crossing the scale its declination is read off, and immediately after a signal is given with the break-circuit key in the hands of the observer, which is recorded upon the sheet on the cylinder of the spring-governor. This signal announces the approach of the star to the right-ascension wires; the two passages are noted in succession, occurring at the equator at an interval of four seconds of time. The signal for the instant of their occurrence is given by a tap of the finger on the break-circuit key.

"For every fifth or sixth star the signals are varied by 'breaks' and 'dots,' for which a parallel record is kept in the columns containing the readings of the declination scale; this is done to ensure the identification of the right ascensions and declinations, and to render certain their correct application, each to its proper star.

"Opportunities are taken to note down striking peculiarities in the distribution and number of stars, the nebulæ, clusters, and double stars. In this manner the observer, with the aid of an assistant, whose office is to record the declinations, magnitudes, &c., has it in his power to give the elements of position and magnitude of each star, at the rate of six or seven stars to a minute; the average frequency of observation is about two to a minute. It has been the usual practice not to extend the zone

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* For a description of Mr. Bond's recording apparatus see *Monthly Notices*, vol. xi. p. 163.

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much beyond the limits of two hours in right ascension. On the following night the observation of the zone is repeated. In this instance the assistant states the magnitude and declination by the previous night's work ; the observer has then an opportunity for correcting his last night's results by comparing them with the stars themselves, as they pass the field. The record sheets are now to be read off, and their indications transferred to the note-book in a column opposite to that of the declinations. The counting of the hours, minutes, and seconds on the sheet, is commenced at a point which gives the right ascension of each star differing, by a small amount—usually by less than two seconds—from its place referred to the mean equinox for the beginning of the year. The sheet measures twelve inches by twenty. One side of such a sheet is occupied with observations extending over two hours and twenty minutes. The hours and minutes are entered from the side of the sheet, and the seconds from the top."

The *Nautical Almanac* for 1859 has recently been published. Besides the usual quantity of matter, it contains the ephemerides of the small planets for 1856, in the form of a Supplement, as mentioned in the last number of the *Monthly Notices.*

At the meeting of the French Institute, held on the 23d of July, Sir John Herschel was elected one of the eight Foreign Associates of the Institute, in the room of the late M. Gauss.

The Royal Society has awarded the Copley Medal this year to M. Leon Foucault, for his various researches in experimental physics. Of the two Royal Medals one has been awarded to Mr. Hind, for his discovery of ten planetoids, the computation of their orbits, and various other astronomical discoveries; and the other to Mr. J. O. Westwood, President of the Entomological Society, for his various monographs and papers on entomology.

Discovery of a new Comet. By M. Bruhns.

A new comet was discovered by M. Bruhns on the 12th of November, at $15\frac{1}{4}^{\text{h}}$. Shortly afterwards he obtained the following observation of it:—

	Berlin M.T.	App. Comet's R.A.	App. Comet's Decl.
	h m s	° ′ ″	° ′ ″
Nov. 12	17 21 53·3	149 1 25·7	+2 7 15·3

The comet resembles a faint nebula; it has a daily motion in right ascension of about −20′ in arc; and is almost motionless in declination.*

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* See the elements of this comet on next page.